

Finally, I would recommend that subject age be carefully considered in treatment evaluation. Speech development is frequently cited as an argument favoring early surgery. Many of us are convinced that speech is difficult to correct in adult patients. Schultz *et al* (1972) presented data supportive of that viewpoint. However, several elementary school children I've observed have developed normal articulation without speech therapy following surgical treatment or provision of a prosthesis. Lenneberg (1967) presents a critical period hypothesis which states that readiness for speech learning extends approximately from two years to puberty. This hypothesis is important to us. The critical period is undoubtedly biologically determined. The hypothesis should receive a great deal of investigation.

### References

- LENNEBERG, E. H., *Biological Foundations of Language*. New York: John Wiley and Sons, 1967.
- SAXMAN, J. H., A Call for New Directions in Cleft Palate Speech Research. American Cleft Palate Association Convention, Phoenix, 1972.
- SCHULTZ, R., HELLER, J. C., SIDOTI, E., and LEWIN, M., An Evaluation of Speech Following Pharyngeal Flap Surgery. American Cleft Palate Association Convention, Phoenix, 1972.

### Discussion of Dickson Paper

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Dr. Dickson's elegant studies have increased our basic understanding of the velopharyngeal valving mechanism by emphasizing the primary importance of the levator and by confirming earlier descriptions of abnormal insertions of the palatal muscles in patients with clefts. Of subordinate interest Dr. Dickson apparently has delivered the *coup de grace* to the salpingopharyngeus and he has helped us to understand a little more clearly the nebulous palatopharyngeus.

What do these studies mean to our search for the ultimate refinements of palatal surgery? The answer is not clear. It is possible, after all, that there simply is no ultimate or one definitively correct method for palate repair or flap construction. On our cleft palate team there are four surgeons. Each employs a somewhat different technique for palate repair and flap construction and each turns over a somewhat different proportion of his cases to plastic surgery residents. It is disconcerting that the results of this diversity are curiously uniform—mostly good, occasionally poor.

There can be little doubt that the carefully planned gently executed operation producing a repair free of tension almost inevitably will yield a

result superior to that obtained by crude destructive surgery. It also may be true that within limits the surgeon does enjoy a degree of latitude in the selection of the precise technique he is going to use.

Many surgeons today use lengthening procedures for palate repairs, often with the Cronin or Millard modifications. There also is increased interest in levator dissections with medial rotation and repositioning of the abnormal insertions as suggested by Ruding in 1955. The findings of Dr. Dickson suggest that these maneuvers are theoretically sound; and yet it must be remembered that their practical clinical value remains disputed after a number of years of widespread use.

The theoretical considerations dictating the design of pharyngeal flaps are more difficult to define than those governing palate repair. The flap operation is a pragmatic one in which the ill effects of one abnormality are lessened by the introduction of another abnormality. Many variations on the basic surgical design are possible with expectation of obtaining approximately equivalent clinical results. Evidence, in my opinion, suggests that most flaps have a static function and the dynamic effects of the flap operation are due to forces lying outside the flap itself. Dr. Dickson's work indicates that these forces lie predominantly in the levator, a confirmation of the clinical observation that the surgeon is most likely to get good results from flap operations in patients with good levator function.

There is much to be learned about the velopharyngeal valving mechanism, especially about vectors, excursions, and precise innervations of the muscle components. Continuing investigation is necessary and is necessary without specific regard to immediate clinical applications. It is only by increased knowledge that we can acquire the increased understanding necessary for better treatment of valving disorders.